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Framework for Communication and Visualization of IT and Business Alignment for Financial Institution

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ABSTRACT

It is of a great importance for financial institutions to achieve business and IT alignment. It allows the business to focus on its core function and gives IT department an opportunity to concentrate on providing insights on how technology can help business in developing new capabilities. Achieving such alignment will require IT management and IT employees to possess sufficient business understanding of their core operations and business managers to acquire certain level of technical proficiency of IT solutions used in their organizations. This approach requires that the organization develops and fosters communication platform between business and IT as well as among different IT departments. We believe that such communication approach based on a four-level framework is the most versatile and also the most promising one. This paper defines such communication framework for financial institutions by determining the elements of the communication process and drawing relations between this process, organizational culture and other existing, best-practice Information Management frameworks. Additionally, we stress the importance of the visual representation in communicating complex strategic, organizational and technologically oriented subjects. As an important part of the framework, based on our experience, we define guidelines which address general communication and visualization problems faced by an organization when bridging business and IT perspectives on the alignment challenge. This paper concludes with a presentation of a successful implementation of such a framework at a financial institution.

Keywords

Communication framework, IT and business alignment, communication guidelines, visualization guidelines

INTRODUCTION

Business and Information Technology are increasingly interwoven. Especially for financial institutions it is of a great importance to strive towards business and IT alignment and be able to focus on the core of the business. The alignment has been widely researched ((Broadbent, 1993, Henderson, 1993, Maes, 2000, Luftman, 2002)) and has been on the corporate agenda at least since the beginning of the frequent cost cutting exercises in the bank IT departments in the nineties.

Only quite recently the CIOs have started focusing again on IT as a value and innovative factor in banking business. Banking business has changed dramatically in last years due to the growing competitive pressure on international capital markets, influence of non- and near-banks on the classical banking business and through a growing number of increasingly demanding and well-informed clients. Consequently, financial institutions look at IS/IT innovation and proper management of technology to strengthen their competitive advantage. In the long term, the competitive advantage will not be achieved through the use of the technology alone. Hence, banks need to focus on the ability to recognize the technology which brings the value for the business, assess this value and estimate the degree of use of this technology by the client base (Wild O., 2003). This requires, however, that the communication processes and appropriate frameworks are available to streamline communication between business and IT and throughout the whole IT organization (Luftman, 2002, Reich, 2000). Additionally, it is important that on one hand IT management and employees should possess (sufficient for their levels) business understanding of the core operations. Business managers, on the other hand, need to acquire a certain level of technical proficiency of IT solutions used in their organizations. Such approach helps significantly in validating IT importance for banking industry and drives the innovation (Mark, 2004, Ward, 2002, Feeny D. F. , 2000).

In this paper we first review social and communication aspects of the alignment and present the visualization research important for improving the communication process. Furthermore, we explain the need for a framework in creating a communication platform between business and IT and present a design context of such a framework at a financial institution.

Next, we present the communication and visualization framework and its elements. We conclude with the presentation of communication and visualization guidelines.

BACKGROUND WORK

The premise of alignment of business and IT strategies to counterpart the ability of realizing value from IS/IT Strategies for financial institutions was already pointed out in the nineties (Broadbent, 1993) and has since been constantly reinforced by IT consultancy organizations (Curtis, 2004, Laartz, 2004)). For organizations which understand the consequences lack of alignment between business and IT, it is crucial to be aware of communication and social aspects which are very important enablers for such alignment (Luftman, 2002).

Academics and practitioners jointly agree that alignment can not be perceived as happening on the planning level, but the dialogue about business and IT partnership need to take place to allow for contributing to the performance of the organization (Maes, 2000, Avison, 2004). For example Taylor's (Taylor-Cummings, 1998) research results show that so called "culture gap" between IT and business people is one of the reasons for many system development failures. This underlines also a survey conducted last year by Accenture¹ demonstrating that the companies which are successful in achieving alignment goals "create a culture in which business and IT executives collaborate extensively" (Curtis, 2004). However, it is often mentioned that communication of the strategy through mechanisms used by senior managers for conveying necessary information to people in functional and line areas may prove to be "more problematic than developing IT and business plans" (Mark, 2004). Already Broadbent and Weill (Broadbent, 1993) observed that the effective linking of business and information strategies is strengthened by "purposeful communication of the strategic directions of the firm throughout functional areas". More recently, Foegen (Foegen, 2001) stresses the role of communication in promoting information and understanding of IT architecture and IT strategy within an organization .

Framework approach to social aspects of the alignment

Horovitz (Horovitz, 1984) proposes model with clear distinction between intellectual and social dimension embraced in the process of a strategic business planning. Within this model the intellectual dimension embraces the methodologies, techniques and the data used for the formulation of the strategy. The social dimension refers to the choice of actors, their degree of involvement and the communication methods used in decision making process. Consequently, the social dimension refers to the state of understanding between business and IT executives together with the commitment to each other's mission, objectives and plans.

Reich and Benbasat (Reich, 1996) continue this line of research and introduce the concept of "social dimension" of alignment as a part of matrix model for studying Information system responsibilities. The authors (Reich, 2000) continue further by investigating factors which influence social dimension of alignment in financial institutions. They find out that all four investigated factors like Shared Domain Knowledge between business and IT executives (understood as "IT-knowledgeable business managers and business-knowledgeable IT"), IT Implementation Success, Communication between business and IT executives, and Connections between business and IT Planning influence short-term alignment². However, only Shared Domain Knowledge was found to influence long-term alignment seen as "congruence of IT vision between business and IT executives". Furthermore, that study has revealed that the level of Shared Domain Knowledge among executives is linked with the process of opening communication channels between them.

The communication power creates foundations for Balanced Scorecard developed by Kaplan and Norton (Kaplan, 1996). This management system supports the strategy implementation within the organization and besides financial factors emphasizes the importance of soft factors for efficient use of the invested capital. Kaplan and Norton stress that BSC "works best in supporting corporate strategies when it is used to communicate vision and strategy [and] not to control the actions of subordinates" (Kaplan, 2001). Hence, those who see measurement as a control and not a communication tool will not be able to get full advantage of its communication qualities (Kaplan, 2001).

¹ Accenture is a management consulting, technology services and outsourcing company, www.accenture.com

² Short term alignment is understood as "The mutual understanding of current objectives"

Improving capability of the workforce through communication and interaction is presented in The People Capability Maturity Model (CMM). This framework uses Maturity Levels and Process Area Threads (which link common areas of concern across maturity levels) to help successfully address practices and processes within an organization's workforce. Interesting for us is the "Building workgroups and culture" thread, which demonstrates a four-stage process leading to achieving full benefit of workforce capabilities. This process begins with improving coordination and interaction among people and focuses on improving communication skills which are a prerequisite for achieving next maturity level. Through further development of workgroups and development of "participatory culture" (involving the workforce in decisions that affect their work) the organization achieved next maturity step. When workgroups are empowered with the autonomy to manage their work process and activities the fullest benefit of the workgroups is achieved. At the final maturity level workgroups continuously improve their processes by better integration of personal work processes with other workgroup members.

CobiT offers a more general view towards social aspect of alignment. This framework promotes that the realization of the strategic vision not only needs to be planned and managed, but also communicated from different perspectives. This perspective is included in Control Objective Principles in Planning and Organization domain (PO 6) (ISACA, 2000).

While these frameworks demonstrate the importance of encouraging shared understanding, there is a lack of examples on how to achieve it. As IT is inherently complex, the appropriate presentation of relevant information is of great importance. Even standard modeling languages such as UML are still weak at that.

Information visualization

Visualizing information in a wide understanding is a transformation process that converts data or textual values into visual artifacts (interactive or static graphs) to amplify cognition for streamlining communication process (Card, 1999). Graphs and diagrams are one of the most established visual examples used for depiction of abstract concepts. Already Bowman (Bowman, 1968) researches the use of a vocabulary of form elements, grammar of spatial organization, idiom of volumetric perspective, and syntax for phrasing the image as a method to describe properties of visual language. A seminal work theory of graphics was created by Bertin (Bertin, 1974). Bertin distinguished the basic elements of graphical systems such as two-dimensional graphs, maps and networked data and described a framework for their effective design.

More recently Marcus (Marcus, 1995) emphasized three basic principles of effective visual communication: organize, economize, and communicate. 'Organize' means to provide the user with a clear and consistent conceptual structure, 'economize' refers to the process of maximizing effectiveness using minimal set of visual cues, and 'communicate' indicates the process of matching the presentation to the capabilities of the user. We used these principles as a basis for visualization process and the visualization guidelines formulation. Furthermore, Tufte emphasizes the need for providing graphics with the maximized density of useful information (Tufte, 1997, Tufte, 1983) and provides graphical examples of effective visual communication. Important contribution comes from Tractinsky (Tractinsky, 1999) who investigates the use of business communication graph for conveying not only pure information but also presenting objectives and managing Impression.

APPROACHES FOR SUPPORTING COMMUNICATION FOR IT AND BUSINESS ALIGNMENT

We can distinguish three communication and visualization approaches for IT and business alignment: Existing Information Base Approach, Existing Information Base and Information Need Approach and Framework Base Approach. We present these approaches briefly.

In the communication approach based on "Existing Information Base" the activities involve gathering relevant documents, analyzing their content and selecting relevant parts. However, such approach is only appropriate if the information need of the stakeholders is well known and understood. Such communication approach requires minimal personnel and organizational effort and can be launched immediately.

"Existing Information Base and Information Need" approach includes the "information need" as an important element in creation of communication initiative. Now the relevance of the information is determined by the outcomes of the "Information Need" Assessment workshops. Therefore, evolving communication initiative consists of information tailored to the information need of the stakeholders. However, since it involves the use of the existing documentation it implicates that already available documentation provides information in structured and well documented way.

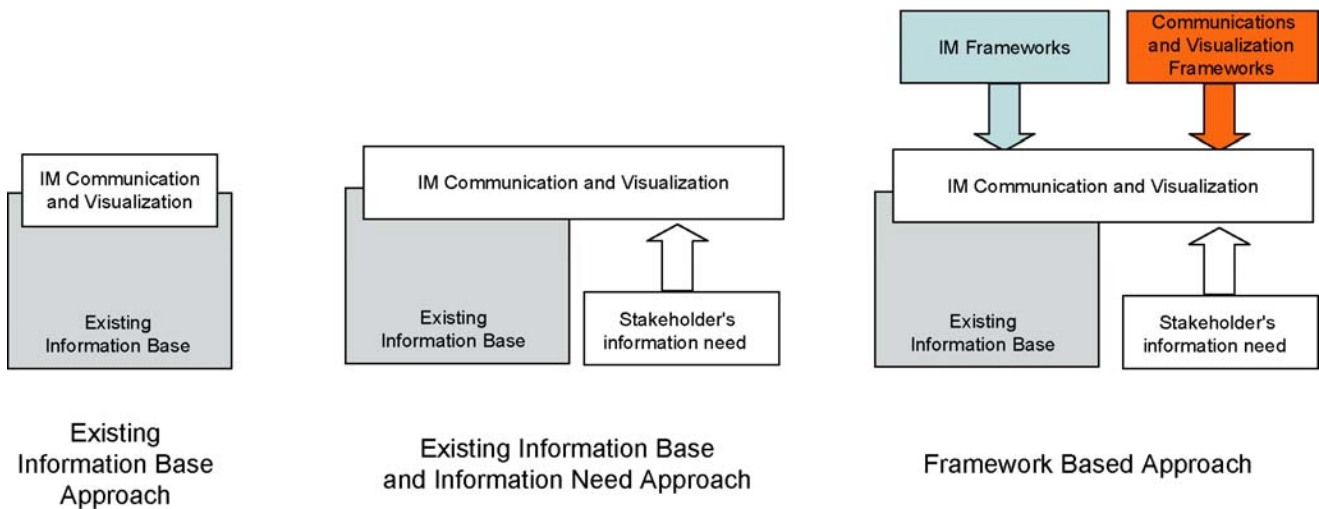


Figure 1. Communication approach is determined by the knowledge of the stakeholders information need, the quality of the existing communication artifacts. Additionally, the amount of effort and resources, which the organization is ready to invest, determines choice of the approach.

The “Framework Based Approach” strives towards offering a most versatile and also the most promising approach in supporting communication platform. In this approach, the existing material is not only re-used based on the need of the stakeholder. Instead, Information Management and communication and visualization frameworks are chosen to attain effective and efficient forms of communicating the alignment and important subjects to the stakeholders. The use of the existing IM frameworks gives the organization a possibility to build on the experience gained by others. Typically, such frameworks combine the academic approach with corporate best practice approach: e.g. ITIL, TOGAF, CobiT or Zachman framework (www.itil.co.uk, 2005, Zachman, 1987, ISACA, 2000)). Additionally, the communication and visualization framework (presented later on in this paper) proposes a process based approach in organizing, structuring and presenting content for a communication initiative.

Steps needed to launch a communication initiative will require a different amount of effort depending on chosen approach. It is up to the organization to decide on the steps which will be carried out for shaping a communication initiative and on the scope and structure of information to be distributed.

COMMUNICATION AND VISUALIZATION FRAMEWORK - DESIGN APPROACH

Our research was exploratory in nature. We aimed at collecting data to reveal new factors and processes which may affect communication between Business and IT and within IT organization itself. Design of the communication and visualization framework required a balanced mix of scientific as well as field-based investigation approaches. We took a scientific investigation approach in formulating, collecting and assessing communication and visualization propositions which work for financial institutions. Additionally, we investigated existing frameworks used for streamlining processes that IT deals with. Furthermore, we researched various visualization frameworks to capture the process of translating body of information into the coherent visual construct.

For our field investigation purpose we targeted following sources of information regarding a communication and visualization process as well as determining the qualities of the organizational culture:

- stakeholders of the communication process (information owners, information producers and consumers form various levels of the organization)

- existing documents information repositories within the organization
- communication initiatives artifacts (organizational survey results and organizational communication principles).

Methods of information gathering are presented in Table 1.

Meeting type	Method	Organization participants	Research team participants	Supported electronically
Assessing information need in the organization	Moderated group meetings	<ul style="list-style-type: none"> - Information owners, - information producers, - information addressees from different levels in organizational hierarchy 	Moderator Project team	Yes (Group-Systems) groupsystems.com
Image Sounding Boards	Moderated interactive Q&A sessions to validate visualization outcomes	Information addressees from different levels in organizational hierarchy	Meeting facilitator	No
Project meetings	Regular Meeting with project teams	Project team	Project team	No
Project meetings with senior executives	On request meeting with CIO	Project team head	Project team head	
Brainstorming and problem-solving meetings	Meeting with chosen project stakeholders and organization leaders	Project team Information owners, information producers,	Project team	No
Informal meetings	Undocumented information exchange very often triggering formal information exchange	Project team members or Information owners or information producers,	Member of the Project team	No

Table 1. Methods of information acquisition during the field study of communication and visualization processes and design of communication approach for financial institution.

We documented our investigation in “Communication Diary”. We used partially structured “notes” where all communication, visualization and organization related information received or created during the projects has been stored and organized. In the early framework design phase we used these notes for sketching the concept of the framework. Consequently, we used them for “validation” phase of the design. These notes also created a valuable canvas for formulating communication and visualization guidelines.

ELEMENTS OF THE FRAMEWORK

We propose a four-level communication and visualization framework for IT and business alignment. The main elements of this framework are: Organizational Culture, Communication and Visualization Process, Information Management Frameworks, Communication and Visualization Guidelines. All elements are based on Existing Information Base containing all available digital or analog documents which store organizational knowledge. Now we shortly explain all elements:

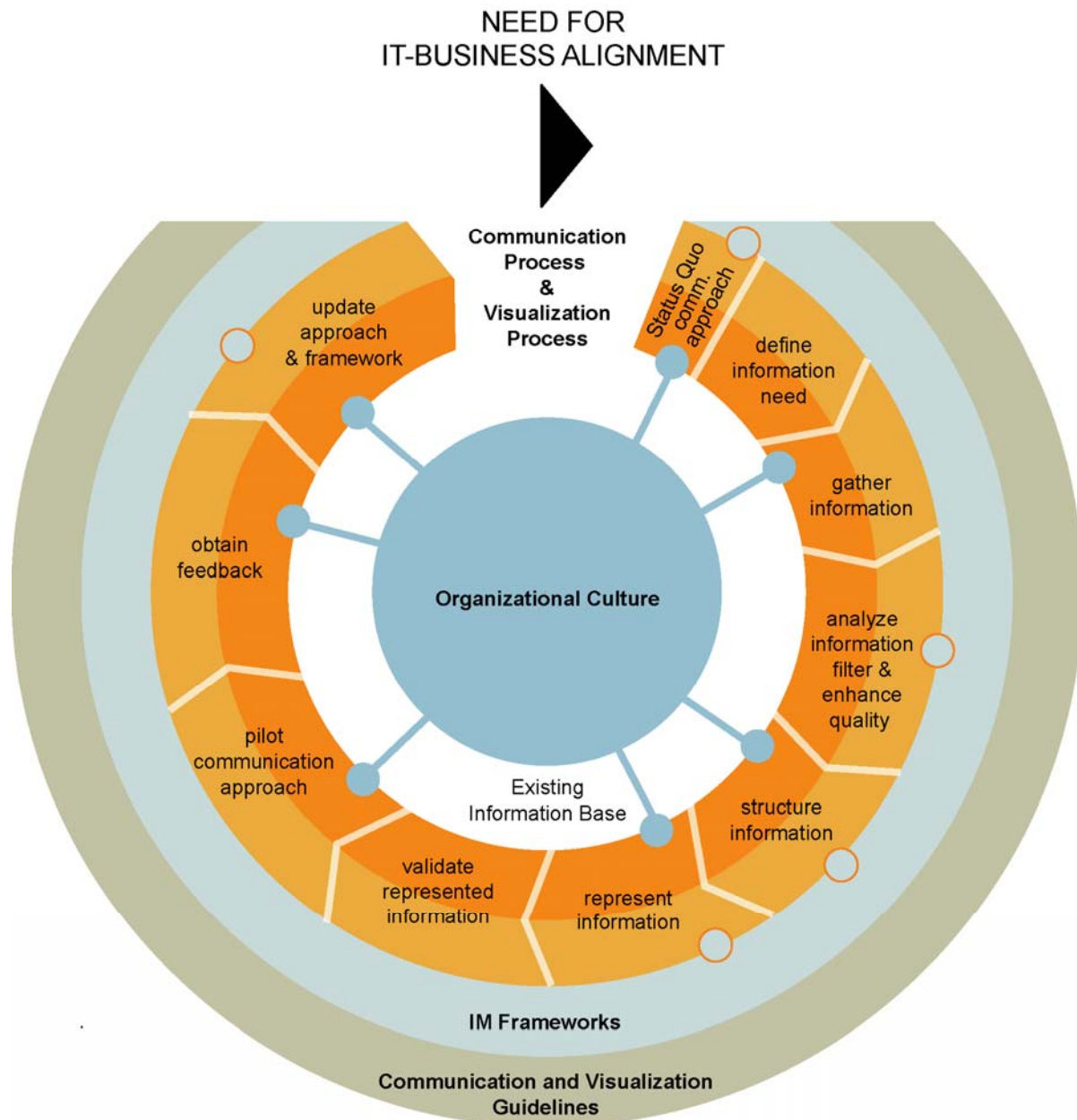


Figure 1: Four-level communication and visualization framework for IT and Business Alignment in Financial Institution. Main influence between the Organizational Culture and Communication and Visualization process is marked with blue circles. Influence of IM frameworks on the Communication and Visualization process steps is marked with light-blue circles.

Organizational Culture

We understand organizational culture as a product of social interaction which is comprised of particular observable forms like organization basic structure, communication methods, systems and procedures and design of work environment created by group of people to confront their social space (Wuthnow, 1988, Forces, 1999). Therefore, it is important to understand the organizational culture or “how the things are done here” to communicate more efficiently.

Assessing organizational culture involves understanding the current role of IT in the company and the way it is controlled. Additionally, it involves understanding of communication processes between IT and business as well as communication patterns used within IT departments itself. This step ensures that the important senior managers are involved in communication initiative. Furthermore, the knowledge of the communication patterns helps in designing information gathering activities as well as secures that the communication fits into the organization.

Communication and Visualization Processes

Within the communication and visualization process we distinguish following steps: Status quo, Define information need, Gather information, Analyze information (filter and enhance quality), Structure information, Represent information, Validate information, Pilot communication approach, Obtain feedback, Update approach and framework

Status-quo of communication approach

From the communication process perspective, this step includes activities involving assessing current state of communication and visualization approach. It involves understanding main objectives of Business and IT alignment and learning about current methods used to achieve such alignment. Additionally, it involves reviewing documentation of previous alignment communication initiatives or assessments. Furthermore, this step requires getting to know elements of organizational culture and introduction to already used IM frameworks. In terms of the visualization process, this step requires analysis of the existing visualization methods, templates or tools used within the organization. Additionally, for both levels it is important to define the influence of the teams which govern the visual and textual communication within the organization (e.g. Corporate Identity).

Define information need

Information gathering and prioritizing workshops are designed with the objective to understand the scope of information need which exists currently in the organization. It is crucial that all stakeholders taking part in the communication process can explain their information needs. Additionally, since the stakeholders are not only information consumers but also information producers it is important to assess what in their opinion needs to be communicated to other departments or business lines.

Gather information

This step requires access to the Existing Information Base and involves gathering information of relevance which is determined by the stakeholders need for information. Consequently, the need for understanding the use of existing IM frameworks as well as communication aspects of organizational culture is very important for this step.

Analyze information (filtering and information quality enhancement)

Within every organization a presentation is prepared with a particular objective in mind such as to convince, promote, or demonstrate ideas. It is also prepared for particular audience like line managers, IT developers or senior business executives. Furthermore, such documentation bears the communication style of its creator as well as it mirrors audience's current knowledge about the particular subject. Therefore, the objective of "Information analysis" step is to extract the content from the presentation. This activity often requires discussing the extracting process with the creator or sponsor of the document. Quality enhancement (or updates) of information begins in this process step and continues through the next one as it depends on the quality of the existing information base. This quality of the existing information is assessed with help of appropriate IM framework.

Regarding the visualization process, this step involves analysis of the visual language used within the organization and learning about the successful and well established visual representation with wide recognition ("legacy" representations).

Structure information

To prepare the documentation for very broad and heterogenic audience, the use of didactic approach (see Communication guideline 1) is appropriate. Such approach profits from the use of IM frameworks which offer a well established (or already known in the organization) structure. With its help one can assess gaps in the IT/IS activities of the organization (gap analysis). However, it is difficult to structure and communicate the information when application of IM framework reveals serious lack (or incoherence) of crucial elements which would normally be expected within the IT area of the organization.

Here the honesty demonstrated by communicating about currently used approaches and solutions as well as transparency in demonstrating the need for improvement may help overcome such challenge.

The structuring activity viewed from the visualization angle involves deciding on the character of syntax, semantics and pragmatics of visual language (Marcus, 1980) which will be used for creation of communication artifact.

Represent information

Information representation requires making decision not only on the communication (textual) and visual but also on the tactile level.

The requirements for the textual level are established by deciding on the style of the language used for communication initiative. The style of the language has to be carefully balanced between the scientific and the informal story-based explanation style. The choice of a style will depend on the communication culture of the organization

The requirements for visual level are created by considering the representation used in:

- Visual language already established in the organization (e.g. PowerPoint templates)
- IM frameworks already used in the organization (often the organization is adapting the representation if the framework it uses)
- Well established in the organization “legacy” representation (only when still valid) which offers a visual symbol which is recognized throughout the whole organization

Moreover new visualization methods, guidelines or artifacts need to be proposed to secure an effective explanation of complex phenomena which can not be represented otherwise.

Often information is represented as a hard copy document. Tactile qualities of the document may significantly raise the efficiency in which information is approached or consumed.

Validate information

The validation of the content is conducted on textual, visual and tactile level. On the textual level the accuracy of the content as well as communication style are proofed. This process can be formalized through holding validation workshops separately for textual and visualization validation. Firstly, the content and structure are verified by information producers (e.g. responsible for the particular implementation project). Later, the information consumers form different part of the organization deliver feedback on the clearness and understanding of the presented subject. Finally, senior management form business and IT departments responsible for the communication initiative are accepting the documents. During the validation step information consumers and senior management are working with the prototypes of the documents to give a more accurate feedback about the communication artifact.

Pilot the communication approach (Road-show)

We define following purpose of the road-show:

- Introduction of a new communication initiative and capturing employees’ interest
- Demonstration of the engagement of the executives and senior executives (through their presence) engagement in supporting business and IT alignment (CIO engagement is reported one of the highest enabler for the IT-business alignment (Luftman, 2002))
- Gathering and exchanging the instant, emotional feedback from the stakeholders
- Ensuring buy-out from all stakeholders

Obtain feedback and update the communication approach and framework

Communication and visualization framework should be regularly revised and adapted to changing conditions of the four framework elements. Actions taken in the communication and visualization process steps need to be evaluated and their adequacy should be re-assessed. During the evaluation workshop the same set of questions used for the “Information need” workshop can be used to measure the information need after the launch of the communication initiative.

Information Management Frameworks

This element comprises the Information Management frameworks available and already used in the organization.

Assessing the use of frameworks within the organization or consulting the available best-practice framework allows for conducting the Information Gap Analysis. Such analysis is helpful in the process of structuring information within the communication and visualization processes.

Communication and Visualization Guidelines

Communication and visualization guidelines form an important part of the proposed framework. The aim of the guidelines is to provide solution for common communication and visualization problems. Instead of a permanent solution, well formed guidelines provide the user with knowledge about a unique, context based solution, by highlighting circumstances in which a particular problem has occurred (Bugajska, 2003). Such guidelines could be created across different organizations and widely shared. We believe that such archiving of reoccurring problems and solutions may suit the communication process better and effectively help in building the best practice for the communication and visualization process. In this paper, we present guidelines in their abridged version.

Communication guidelines

Based on the application of our framework we propose following communication guidelines in addition to general guidelines for proper writing:

Use didactic approach when confronting the stakeholder with previously unknown knowledge

Didactic approach allows the reader to profit most from previously unknown knowledge. Such approach requires providing general definition of basic concepts (e.g. what is a strategy and IT strategy) and explaining relations between them on canvas of the available framework. Furthermore, it requires providing the examples of such processes within the organization.

Use existing IM frameworks for structuring the available information

If possible reuse available IM frameworks for providing a structured approach in explaining the interdependencies between IT and business objectives.

Use consequent wording in describing alignment activities and projects

Per definition, alignment activities are conducted by many groups from different organizational parts. It is important to secure a common textual description for such activities and describe them using consistent words (e.g. “a framework” or a “set of instruments”).

Balance well the detail of provided information

Alignment communication artifacts need to provide information which is of value to all stakeholders but at the same time provide satisfactory level of explanation (see Guideline 1). This can be achieved by bringing in examples from operational level (e.g. presentation of projects or initiatives). Additionally, stakeholders should be informed about the wide spectrum of audience these documents are targeting.

Assess the information need across organization using “need-obstacle-share” principle

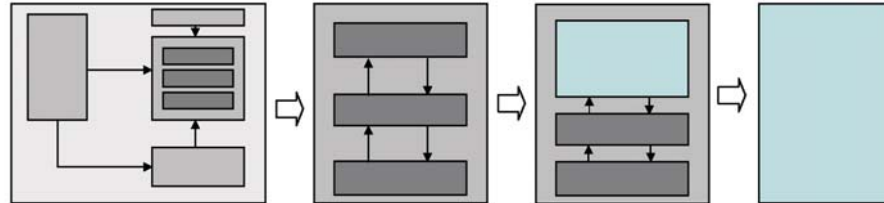
“Need” refers to assessing the information which the stakeholder wants to access. “Obstacle” refers to the hurdle which hinders the stakeholder from information consumption. “Share” refers to information which the stakeholder (information producer) finds important to share with other stakeholders (e.g. *What would you like to know about IT Strategy? What in your opinion inhibits you from receiving this information? What would you find important to communicate about IT Strategy?*)

Use Alignment Communication Artifact as an index to all organizational alignment initiatives

To diminish the negative effect of providing the organization with yet another document, the alignment communication artifact should be treated as an “index” to the existing documentation and as possibility to give an overview to the alignment initiatives/projects within organization.

Visualization Guidelines

1. Use contextual zooming for graphical explanation of complex and nested ideas



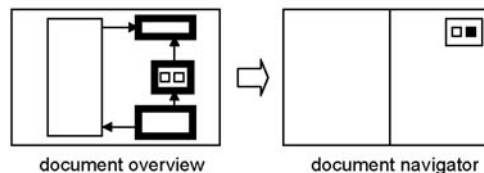
2. Consider using "legacy" representation to maximize the recognition effect



3. Abstract graphical symbols (e.g. arrows) require a textual description to avoid ambiguity



4. Provide an overview of available information and use navigation symbols within the document



5. Offer a tactile experience for efficient access to structured information



6. Use visually appealing representations to engage the reader
7. Co-operate with the guidelines used by Corporate identity of the Organization

Figure 2: Set of visualization guidelines

INTRODUCING COMMUNICATION AND VISUALIZATION FRAMEWORK FOR A FINANCIAL INSTITUTION

Framework proposed in this paper was created for and applied at a leading Swiss financial institution. The need for a communication and visualization framework arose from a need for better communication between all levels across the IT organization, management of business lines and business executives. This need was again underlined in the analysis of the results from a recently conducted IT organizational wide survey. To address this concern, CIO and his strategic and architecture division decided to introduce a long term communication initiative which should result in creation of yearly updated booklets for IT organization and business management. These booklets should cover following levels important for the alignment: IT Strategy, IT Strategy Implementation, IT Architecture and Processes and Organization.

During definition of the project objectives, we gathered input regarding the elements of the organizational culture which influence communication and information sharing and the current use of IM frameworks within the IT organization. While setting up the communication initiative team, we defined the creators of the information and defined the groups of information consumers (the audience). During the project team meetings, organized workshops and informal meetings we could learn about communication methods and processes used in this organization.

“Assessing information need” meetings were designed with the objective to understand the scope of information need which currently existed in the organization. It was crucial to gain access to the representatives of all stakeholders taking part in the communication process to give them the possibility to communicate their information needs as well as explaining what in their opinion would need to be communicated to other parts of organization/departments or business lines.

After defining the information need we designed the scope of information need which had to be addressed. This allowed us to start assessing the existing document base in a structured manner. In this step we used the knowledge of the actual application of IM frameworks in the organization and the communication methods present in the organization.

In this financial institution we learned that the organization benefits most from a communication artifact which is omnipresent and can be referred to during numerous meetings conducted every day. Therefore, the idea of using a hard copy document as a communication medium has well defended itself. Additionally, the design of such booklet reinforced the purpose of getting very fast to an appropriate piece of information accompanied by list of references for further inquiries. The process resulted in creation of an A5 size, thumb-index booklet which can be carried along to the meetings and serve as a compendium of important current initiatives as well organization based information. Furthermore, for complex issues involving e.g. time based IT strategy processes or IT architecture and its landscapes we proposed to use double page size visualizations instead of narratives.

While progressing with the design of the IT Communication artifacts we always reviewed all visual representation during the Image Sounding Board meetings. Additionally, all documents have been reviewed by senior management and CIO. In the presented implementation case the timing of the road show event has been carefully chosen and the booklet has been presented by CIO and distributed during well attended events. The evaluation is scheduled for coming weeks.

FUTURE WORK

To further demonstrate the benefits from applying our framework as a tool to support alignment of IT and business areas within an organization, we will implement and test the effectiveness of the framework at other financial institutions. We believe this will serve as an important input towards improving our framework. Additionally, this will also result in gaining more information how to streamline the implementation of the communication and visualization process.

CONCLUSION

In this work we have demonstrated that the framework for communication and visualization of IT and business alignment proposed in this paper offers a comprehensive approach which can be effectively used to support analysis, planning and implementation of the alignment challenge. Such four-level framework includes organizational culture, IM frameworks, and communication and visualization process as well as communication and visualization guidelines as elements. Furthermore, based on gained experience while implementing the framework at a financial institution, we elaborate on the selection of relevant communication and visualization guidelines. Consequently, we have reported this first implementation of the framework at a financial institution. In the near future we plan to evaluate our framework by introducing it at other financial institutions.

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